WHAT IS CLAIMED IS:

1. A microscope arrangement for simultaneously inspecting a plurality of spots on the surface of a substrate, the arrangement having an optical axis substantially perpendicular to the surface, the arrangement comprising:

(a) at least one source of substantially parallel illumination directed non-parallel to said optical axis;

(b) an optical arrangement configured for directing said substantially parallel illumination to illuminate spaced apart spots on the surface of the substrate and for returning radiation from the spots, said optical arrangement including an array of reflectors located and angled so as to generate an array of spaced illumination beams substantially parallel to said optical axis, each reflector reflecting at least 90% of incident radiation intensity; and

(c) an array of optical sensors, each of said sensors being spatially associated with a corresponding at least one of said reflectors so as to receive at least part of the radiation returned from the spot illuminated by the corresponding reflector.

2. The microscope arrangement of claim 1, wherein said at least one source of illumination is implemented as a single source of illumination.

3. The microscope arrangement of claim 1, wherein said at least one source of illumination is configured to provide illumination having a wavelength no greater than 266 nm.

4. The microscope arrangement of claim 1, wherein said array of reflectors and said array of optical sensors are arranged on a common substrate.

5. The microscope arrangement of claim 4, wherein each of said reflectors is adjacent to the corresponding one of said optical sensors.

6. The microscope arrangement of claim 4, wherein each of said optical sensors has a pair of said reflectors deployed on opposing sides of said optical sensor, and wherein said at least one source of substantially parallel illumination provides illumination in two incident directions.

7. The microscope arrangement of claim 4, wherein each of said reflectors has a reflective surface with an aperture formed therein, wherein the corresponding one of said optical sensors is deployed to receive radiation returned from the spot via said aperture.

8. The microscope arrangement of claim 7, wherein said optical arrangement further includes a diffractive optical element deployed for generating a plurality of illuminating radiation beams, each of said beams being directed towards one of said reflectors, each of said radiation beams having a

non-uniform intensity distribution such that a proportion of said radiation intensity falling on said reflective surface around said aperture is greater than a ratio of said reflective surface area to said aperture area.

9. The microscope arrangement of claim 4, wherein said optical arrangement further includes a diffractive optical element deployed for generating a plurality of illuminating radiation beams, each of said beams being directed towards one of said reflectors.

10. The microscope arrangement of claim 4, wherein said optical arrangement further includes a microlens associated with each of said reflectors and deployed to focus parallel illumination to provide a pinhole illumination effect.

11. The microscope arrangement of claim 4, wherein each of said reflectors has a reflecting surface, a normal to said reflecting surface being at 45° to said optical axis.

12. The microscope arrangement of claim 4, wherein each of said reflectors has a reflecting surface, a normal to said reflecting surface being at less than 45° to said optical axis.

13. The microscope arrangement of claim 4, wherein said substrate has a base plane, wherein a plurality of said reflectors are mounted at differing heights above said base plane.